PATENT CLAIMS

1. A lithographic printing form comprising

- a substrate, preferably a metal plate, and

- an ink comprising a polymer or copolymer with acid groups,

wherein at least one of said groups has been converted to the corresponding amide.

2. A lithographic printing form according to claim 1, characterized in that that the amide is made from ammonia, an alkyl amine or a dialkyl amine.

3. A lithographic printing form according to claim 1 or 2, characterized in that the ink is dried or baked.

4. A lithographic printing form according to any one of claims 1 to 3, characterized in that the polymer or copolymer is composed of at least one of the monomers: acrylic acid, methacrylic acid, maleic acid, maleic acid anhydride, fumaric acid, fumaric acid anhydride, styrene, sulfonated styrene, and vinyl.

5. A lithographic printing form according to any one of claims 1 to 4, characterized in that the polymer has an average molar mass above 250 g/ mole, preferably above 10 000 g/mole and most preferred above 14000 g/mole.

6. A lithographic printing form according to any one of claims 1 to 5, characterized in that the ink further comprises at least one of the following components:

a) from 0.1 to 20 % by weight of a surfactant,
b) from 0.1 to 20 % by weight of a colouring agent,
c) from 0.001 % by weight to saturation of one or more fatty acids, oils or alcohols,
d) from 0.001 to 10 % by weight of at least one metal or metal complex from the group of transition metals,
e) from 0.1 to 80 % by weight of a surface tension/viscosity modifying agent,

f) from 0.01 to 20 % by weight of a hydrofilic additive,

g) from 5 to 90 % by weight of water.

7. A lithographic printing form according to claim 6, characterized in that said metal or metal complex is selected from the group consisting of chromium, titanium, iron, molybdenum, manganese, cobalt, zirconium, vanadium and complexes thereof.

8. A lithographic printing form according to any one of claims 1 to 7, characterized in that the substrate is an aluminium plate.

9. A method of preparing a lithographic printing form according to any one of claims 1 to 8 comprising the steps of:

- treating a substrate, preferably a metal plate, with an ink comprising a polymer or copolymer with acid groups wherein at least one of said groups has been converted to the corresponding amide;
- drying the substrate, and
- optionally heating the substrate.

10. A method of preparing a lithographic printing form according to claim 9, characterized in that that the amide is made from ammonia, an alkyl amine or a dialkyl amine.

11. A method of preparing a lithographic printing form according to claim 9 or 10, characterized in that the polymer or copolymer is composed of at least one of the monomers: acrylic acid, methacrylic acid, maleic acid, maleic acid anhydride, fumaric acid, fumaric acid anhydride, styrene, sulfonated styrene, and vinyl.

12. A method of preparing a lithographic printing form according to any one of claims 9 to 11, characterized in that the polymer has an average molar mass above 250 g/ mole, preferably above 10 000 g/mole and most preferred above 14000 g/mole.

13. A method of preparing a lithographic printing form according to any one of claims 9 to 13, c h a r a c t e r i z e d in that the ink further comprises at least one of the following components:

a) from 0.1 to 20 % by weight of a surfactant,
b) from 0.1 to 20 % by weight of a colouring agent,
c) from 0.001 % by weight to saturation of one or more fatty acids, oils or alcohols,
d) from 0.001 to 10 % by weight of at least one metal or metal complex from the group of transition metals,
e) from 0.1 to 80 % by weight of a surface tension/viscosity modifying agent,
f) from 0.01 to 20 % by weight of hydrofilic additive,
g) from 5 to 90 % by weight of water.

14. A method of preparing a lithographic printing form according to claim 13, c h a r a c t e r i z e d in that said metal or metal complex is selected from the group consisting of chromium, titanium, iron, molybdenum, manganese, cobalt, zirconium, vanadium and complexes thereof.

15. A method of preparing a lithographic printing form according to any one of claims 9 to 14, c h a r a c t e r i z e d in that the substrate is heated to above 150 °C preferably to between 170 °C and 220 °C and most preferably to between 190 °C and 210 °C.

16. A method of preparing a lithographic printing form according to any one of claims 9 to 15, c h a r a c t e r i z e d in that the substrate is aluminium plate.

17. A method of preparing a lithographic printing form according to any one of claims 9 to 16 c h a r a c t e r i z e d in that the ink is dried onto or baked into the substrate.

18. A process for producing an ink for use in the method according to any one of claims 9 to 17 comprising the steps of:

g) treating a polymer or a copolymer having acid groups with an amine,
h) adjusting pH to above 7,

i) optionally adding fatty acid, oil or wax,
j) optionally adding one or more transition metals or metal complexes,
k) optionally adding colouring agent
l) optionally heating the ink.

19. A process according to claim 18, c h a r a c t e r i z e d in that the amine is ammonia, an alkyl amine or a dialkyl amine.

20. A process according to claim 18 or 19, c h a r a c t e r i z e d in that further base is added in order to keep pH between 7.5 and 8.5

21. A process according to any one of claims 18 to 20, c h a r a c t e r i z e d in that the polymer or copolymer is composed of at least one of the monomers: acrylic acid, methacrylic acid, maleic acid, maleic acid anhydride, fumaric acid, fumaric acid anhydride, styrene, sulfonated styrene, and vinyl.

22. A process according to any one of claims 18 to 21, characterized in that the mixture is heated to between 65 °C and 180 °C, preferably between 70 °C and 150 °C, and optimally about 80 °C.

23. A process according to any one of claims 18 to 22, characterized in that the fatty acid is chosen from the group consisting of lauric, myristic, palmitic, stearic, arachidic, palmitoleic, oleic, linoleic, linolenic acids, lanoline and lanolinate-alcohols.

24. A process according to any one of claims 18 to 23, characterized in that the fatty acid is extracted from lanolin or lanolin alcohols.

25. A process according to any one of claims 18 to 24, characterized in that said metal or metal complex is chromium, titanium, iron, molybdenum, manganese, cobalt, zirconium or vanadium.

26. A process according to any one of claims 18 to 24, characterized in that colour agent is a dye preferably chosen from the group consisting of Rhodamine B, Gallocyanine, Methyl green, Sudan IV, Erythrosine B and Crystal Violet

27. An aqueous ink comprising a polymer or copolymer with acid groups wherein at least one of said groups has been converted to the corresponding

amid, c h a r a c t e r i z e d in that the ink further comprises from 0.001 % by weight to saturation of one or more fatty acids and optionally one or more of the following ingredients:

- from 0.1 to 20 % by weight of a surfactant,
- from 0.1 to 20 % by weight of a colouring agent,
- from 0.001 to 10 % by weight of at least one metal or metal complex from the group of transition metals,
- from 0.1 to 80 % by weight of a surface tension/viscosity modifying agent,
- from 0.01 to 20 % by weight of hydrofilic additive

28. An ink according to claim 27, c h a r a c t e r i z e d in that said fatty acid is extracted from lanolin or derived from hydroxyleate lanolin preferred in the form of lanoline oil, lanoline acid or lanolinate alcohols.

29. An ink according to claim 27 or 28, c h a r a c t e r i z e d in that said metal or metal complex is selected from the group consisting of chromium, titanium, iron, molybdenum, manganese, cobalt, zirconium and vanadium.

30. An ink according to any one of claims 27 to 29, c h a r a c t e r i z e d in that said colouring agent is a dye preferably chosen from the group consisting of Rhodamine B, Gallocyanine, Methyl green, Sudan IV, Erythrosine B and Crystal Violet.

31. An ink according to any one of claims 27 to 30, c h a r a c t e r i z e d in that the additive is chosen from the group consisting of: ethylene glycol monomethyl ether, ethylene glycol dimethyl ether, ethylene glycol monoethyl ether, ethylene glycol diethyl ether, ethylene glycol mono-n-propyl ether, ethylene glycol monoisopropyl ether, ethylene glycol mono-n-butyl ether, ethylene glycol mono-sec-butyl ether, ethylene glycol monoisobutyl ether, ethylene glycol mono-tert-butyl ether, ethylene glycol mono-n-amyl ether, ethylene glycol mono-n-hexyl ether, propylene glycol monomethyl ether, propylene glycol dimethyl ether, propylene glycol monoethyl ether, propylene glycol diethyl ether, propylene glycol mono-n-propyl ether, propylene glycol monoisopropyl ether, propylene glycol mono-n-butyl ether, propylene glycol mono-sec-butyl ether, propylene glycol monoisobutyl ether, propylene glycol mono-tert-butyl ether, diethylene glycol monomethyl

ether, diethylene glycol dimethyl ether, diethylene glycol monoethyl ether, diethylene glycol diethyl ether, diethylene glycol mono-n-propyl ether, diethylene glycol mono-iso-propyl ether, diethylene glycol mono-n-butyl ether, diethylene glycol mono-sec-butyl ether, diethylene glycol monoisobutyl ether, diethylene glycol mono-tert-butyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether, dipropylene glycol mono-n-propyl ether, dipropylene glycol mono-n-butyl ether, polyethylene glycol monopropyl ether, polyethylene glycol monobutyl ether, ethylene glycol, propylene glycol, any alcohol with 1 to 6 carbon atoms e.g. methanol, ethanol, n-propanol, 2-propanol etc.

32. An ink according to any one of claims 27 to 31, c h a r a c t e r i z e d in that it has a surface tension between 0.01 and 0.10 N/m, preferably between 0.02 and 0.06 N/m and most preferably between 0.03 and 0.05 N/m.